Lecture II

Medical Conditions During Pregnancy

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Medical Conditions During Pregnancy

Nausea and Vomiting
Heartburn
Constipation
Hemorrhoids
Headache
Infectious Complications during pregnancy
Hyper& hypothyroidism during pregnancy
Gestational diabetes mellitus
Pregnancy-induced hypertension
Preterm labor
Induction of labor

Nausea and Vomiting of Pregnancy (NVP)

- Usually during first trimester
- Usually occurs on rising and diminishes as day progresses
- Hyperemesis gravidarum:-
  - Severe nausea and vomiting lead to dehydration and malnutrition
- Cause: Unknown

Symptomatic treatment

Nonmedical treatment: First line

a. Eat salt crackers.

b. Keep stomach from becoming completely empty.

c. Eat small, dry meals.

d. Avoid spicy and odorous foods.

Symptomatic treatment

- The goal of antiemetic therapy is to maintain nutrition and hydration status.
  - Vitamin B6(pyridoxine)
    - 10–25 mg PO TID First-line therapy.
  - Diphenhydramine
    - 25–50 mg PO every 8 hours First-line therapy.
  - Promethazine
    - 12.5–25 mg PO, PR every 6 hours Second line of therapy

Symptomatic treatment

- **Metoclopramide**
  - 10 mg PO every 6 hours if antihistamines fail
- **Ondansetron**
  - 4–8 mg IV/PO every 6–8 hours Available
- **Ginger extract**
  - 125–250 mg PO every 6 hours
  - Available OTC as food supplement

Hyperemesis gravidarum

- severe NVP that persists and can be trimental to the mother or fetus.
- It often requires hospitalization for:-
  - parenteral fluid and electrolyte replacement,
  - vitamin supplementation,
  - and antiemetic therapy.

2-Reflux Esophagitis (Heartburn)

- Symptoms worsened by eating, lying down, or bending over.
  - Lifestyle and dietary modifications.
  - If unsuccessful,
    - calcium carbonate.
    - H2 -receptor antagonists(category B).
    - proton-pump inhibitors (category C) .

3-Constipation

- Cause:
  - Decreased peristalsis
- Nonmedical treatment
  - Increase high-fiber foods.
  - Increase fluid intake to eight 8-oz glasses of water a day.
  - Increase exercise
- Symptomatic relief
  - Bulk laxatives: Not absorbed
  - Surfactants

- Stimulants: Not recommended as first-line therapy
- Avoid mineral oil: Impairs vitamin K absorption and could cause hypoprothrombinemia

4-Hemorrhoids

- <u>Caused by:</u>
  - Constipation and increased venous pressure below uterus
- Correct constipation with stool softeners.
- Sitz baths
- External medications preferred.

5-Head ache

- Cause:
  - Hormone fluctuations
- Therapy
  - Rest, ice packs
  - Acetaminophen
- **Drugs to avoid**
  - **Aspirin** and nonsteroidal anti-inflammatory drugs (NSAIDs)
  - **Triptans, ergotamine**

Urinary Tract Infections (UTI)

- **UTIs can present as either :-**
  - **asymptomatic bacteruria(i.e., presence of significant bacterial on two consecutive clean catch samples)**
  - **or acute cystitis(i.e., infection of the bladder that includes symptoms of urgency, frequency, dysuria, and hematuria without fever or evidence of systemic illness).**
  - **Pyelonephritis is an infection of the upper urinary tract involving the kidneys.**

ASB and cystitis

- Bacteria migrate from vaginal and perineal flora up to cause ASB and cystitis;
  - E. coli (most common),
  - Klebsiella pneumoniae,
  - Proteus mirabilis,
  - Enterobacter species,
  - Enterococcus, Staphylococcus saprophyticus,
  - Group B β-hemolytic Streptococcus.

ASB and cystitis

- **Antibiotic selection should be:-**
  - **guided by antimicrobial susceptibility testing.**
  - **produce adequate concentration in the urine,**
  - **have a low resistance rate,**
  - **safe to use during pregnancy.**
  - **7-day regimen should be used whenever possible.**
- **For coverage of the most common organism, E. coli, oral nitrofurantoin or cephalexin is often used.**

Pyelonephritis

- Is an infection of the upper urinary tracts.
- Signs and symptoms:-
  - –Fever, shaking chills, flank pain,
  - –Nausea and vomiting.
- Endotoxins produced from gram-negative bacteria can cause complications such as:-
  - – Septic shock,
  - –Disseminated intravascular coagulation,
  - –Acute respiratory distress syndrome (ARDS).

Treatment Of Pyelonephritis

- **IV hydration,**
- **Antipyretics.**
- **Antibiotics,**

1-Started with Parenteral

- **Cefazolin (1st generation cephalosporin) 2 g IV every 8 hours in addition to gentamicin (targeted peak of 8 mcg/mL and trough less than 1 mcg/mL) and continued for at least 48 hours after becoming a febrile.**
- **An alternative treatment regimen would be ceftriaxone (3rd generation cephalosporin) 2 g IV every 24 hours.**

2-Then with oral, afterward, based on culture results such as

- **Cephalexin 500 mg PO four times daily for a total of 10 to 14 days of antibiotic therapy.**

Treatment Of Pyelonephritis

- **3-Antibiotic prophylaxis to prevent recurrence with nitrofurantoin 100 mg PO each night during the pregnancy until 4 to 6 weeks postpartum ---**
  - **Nitrofurantoin should be discontinued close to term because it can cause hemolytic anemia in infants with glucose 6 phosphate dehydrogenase (G6PD) deficiency.**
  - **Nitrofurantoin should never be used for the treatment of pyelonephritis, a deep tissue infection, because it only concentrates in urine and does not penetrate tissue.**

- **GROUP B STREPTOCOCCUS INTRAPARTUM PROPHYLAXIS (GBS)**
  - Cause:-
    - urinary tract infection,
    - amnionitis,
    - endometritis,
    - wound infection.
- Antibiotics given to the mother during preterm labor and delivery to prevent neonatal GBS disease, which may lead to sepsis, pneumonia, and meningitis.

GBS

- **The decision to treat women with intrapartum antibiotics based on either:**
  - **1- Positive GBS culture at 35 to 37 weeks' gestation**
  - **2- OR**
    - **Previous infant with invasive GBS disease**
    - **GBS bacteriuria during any trimester of the current pregnancy**

GBS

3-<u>Unknown GBS status at onset of labor and have any of the following:</u>

-delivery at less than 37 weeks' gestation,

-amniotic membrane rupture at 18 hours or more

-intrapartum temperature of 38°C or greater.

GROUP B STREPTOCOCCUS INTRAPARTUM PROPHYLAXIS (GBS)

- **Penicillin G,**
  - 5 million units IV initial dose,
  - then 2.5–3.0 million units every 4 hours until delivery

  Or **Ampicillin**,
  - 2 g IV initial dose,
  - then 1 g IV every 4 hours until delivery
- **Patients allergic to penicillin take**
  - **Clindamycin,**
    - 900 mg IV every 8 hours until delivery.

  Or **Vancomycin,**
    - 1 g IV every 12 hours until delivery

7-Diabetes during pregnancy

- Diabetes during pregnancy can be either:-
  - pregestational diabetes(diabetes before pregnancy)
  - or gestational diabetes(first detected during pregnancy).

- Pregestational diabetes care should begin 6 months before conception with the goal of good glycemic control (Hgb A1c levels close to normal).

FBS ≥95 mg/dL. Treat as GDM.

Diabetes during pregnancy

Complications in the offspring

- Macrosomia, hypocalcemia, respiratory distress syndrome, polycythemia, and jaundice

Maternal complications

- Hydramnios, preeclampsia and obstructed labour.

Risk factors for GDM

- Age >25 years
- Obesity (BMI≥25Kg/m^2)
- Family history of diabetes,
- Previous delivery of an infant >4 kg
- A history of a stillbirth
- A history of glucose intolerance

Treatment in women with GDM
Insulin

- **Insulin Administration**
  - Two daily doses of intermediate and regular insulin
  - with two-thirds of the daily dose administered in the morning and the remainder in the evening.

Alternative treatment in women with GDM

- Glyburide, a second-generation sulfonylurea (gestational age of >30 weeks, FBG <110 mg/dL, and 1-hour postprandial <140 mg/dL)

- More recently, metformin can be used during pregnancy for GDM, but less successful as monotherapy in women with higher glucose levels.

- Metformin is usually reserved for patients with high insulin requirements (>300 units daily) in the second and third trimesters

8-Hypertension, Preeclampsia, and Eclampsia

- **Hypertension in pregnancy is systolic blood pressure (BP) of ≥140 mm Hg or a diastolic BP of ≥ 90 mm Hg on two occasions 6 hours apart.**
  - **Chronic hypertension existed before conception.**
  - **Gestational hypertension occurs during pregnancy or in the first 24 hours post partum in a woman without preeclampsia or preexisting hypertension.**

Drugs for treatment of chronic hypertension in pregnancy

1-Methyldopa.

- (Aldomet) is a centrally-acting α2-agonist which decreases sympathetic flow.

- Side effects
  - Dizziness, sedation, and lack of energy, liver toxicity.

- The usual starting dose is 750 mg to 1 gram daily in three to four divided doses.

Drugs for treatment of chronic hypertension in pregnancy

2-Labetalol

α_1 β_1, β_2, antagonism (α/β antagonism ratio of 1:4, orally). Considered a first-line drug

Benefits:

- Maintain adequate utero placental blood flow.
- Increased fetal lung maturation.
- Decreased platelet consumption in women with preeclampsia.
- Low concentration in breast milk.

Drugs for treatment of chronic hypertension in pregnancy

- – Labetalol therapy
  - is usually started at 100 mg PO TID or QID; the dose can be titrated to 1200 mg PO daily if needed.
- Adverse effects
  - in pregnant women include headache, dizziness, myalgia, and tremors.
  - Neonatal effects include bradycardia and hypotension.

Drugs for treatment of chronic hypertension in pregnancy

Diuretics

- decreased utero placental perfusion. Therefore, diuretics are **not recommended** for the control of PIH.

Acute treatment of severe hypertension in pregnancy

- **Hydralazine**
  - Hydralazine 5 mg IV over 1 to 2 min and repeated every 20 to 30 minutes to a cumulative dose of 20 mg.
- **Side effects**
  - nausea, vomiting, tachycardia, flushing, headache, and tremors.

Preeclampsia

- Hypertension and proteinuria.
- Symptoms of severe preeclampsia include:-
  - headaches,
  - visual disturbances,
  - and upper abdominal pain.
- Drug therapy **to prevent eclampsia and cerebral complications**.
- BP should be reduced gradually to avoid a reduction in utero placental perfusion.

Preeclampsia

Treatment options

- Hydralazine, labetalol, and nifedipine.

- Magnesium sulfate prophylaxis is used to prevent eclamptic seizures

  (4–6 g IV loading dose followed by 2 g/hour continuous infusion).

Magnesium sulfate prophylaxis

- **Magnesium Sulfate Prophylaxis**
  - Magnesium sulfate is a potent cerebral vasodilator and ↑ the synthesis of prostacyclin.
    - ↓ systemic vascular resistance.
    - ↓the risk of eclampsia in pre-eclamptic women, **why?**
      - »Seizures caused by ↓ cerebral blood flow because of vasospasm

Magnesium sulfate prophylaxis

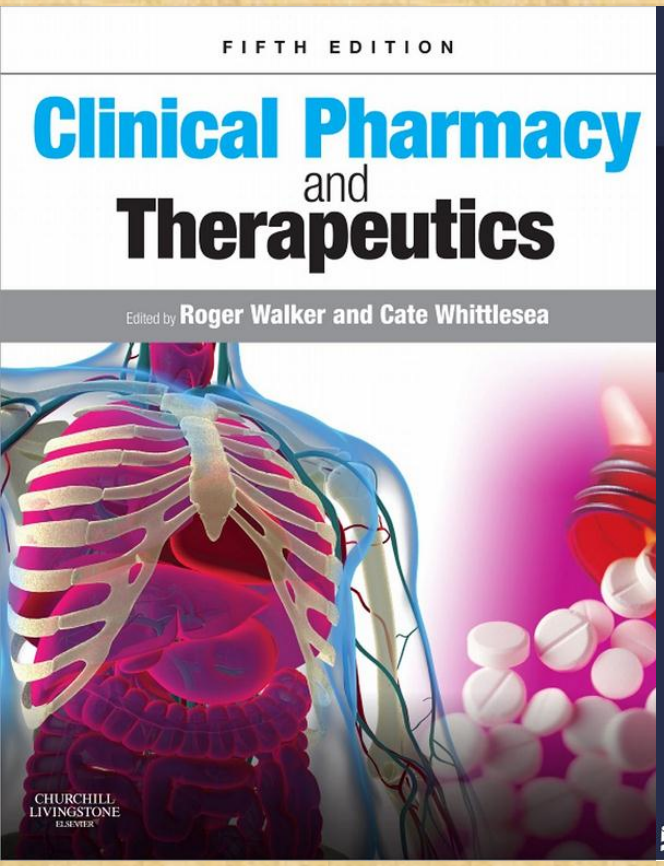
- Magnesium sulfate is preferred over barbiturates and benzodiazepines for eclampsia **why?**
  - it does not cause maternal sedation or fetal depression
- Monitoring Magnesium Sulfate Therapy
  - deep tendon reflexes (patellar reflex), respiratory rate, and urine output should be monitored periodically

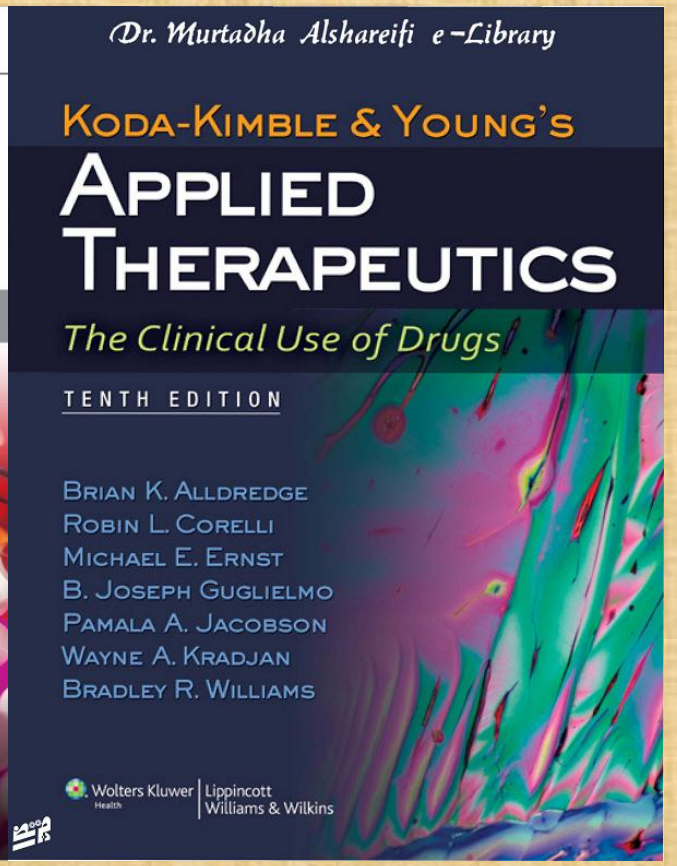
Eclampsia

- **Is the term used when a woman with preeclampsia develops seizures.**

- **<u>Treatment options</u>**
  - **Magnesium sulfate, lorazepam, diazepam, and phenytoin have all been used**

References





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CHAPTER 71: Pregnancy and Lactation

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FOUNDATION OVERVIEW

Drug use in pregnancy requires special considerations, since medications have the potential to affect the developing fetus. In addition, pregnancy alters pharmacokinetic parameters of some medications, resulting in a need for dosage adjustment. Drug regimens for management of acute and chronic disorders in pregnancy should be tailored to optimize the health of the mother while minimizing risk to the fetus. After delivery, measures should be taken to minimize drug exposure to the breastfeeding infant. Pharmacists can play a key role in maximizing the safe and effective use of medications during pregnancy and lactation.

PRECONCEPTION CARE

Preconception care should be discussed with all women of childbearing age. The goal of preconception care is to minimize poor pregnancy, fetal/infant and maternal outcomes. Elements of preconception care include supplementation, dietary considerations, immunizations, and optimization of control of chronic diseases.

Vitamin and Mineral Supplementation

Folic acid deficiency is a major cause of neural tubal defects (NTDs), and adequate intake of folic acid can reduce the incidence of NTDs by 50% to 70%. Most women of childbearing age should be advised to take a multivitamin (MVI) with 400 µg of folic acid daily. Higher doses (4 to 5 mg daily) are required for women with an increased risk of delivering a child with NTDs (eg, women taking antiepileptic medications). Initiation of supplementation should be at least 1 month before conception and continue throughout the first trimester.